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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/034,745	12/28/2001	Richard E. Smalley	11321-P012USD3	2473

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EXAMINER

MAPLES, JOHN S

ART UNIT PAPER NUMBER

1745

DATE MAILED: 07/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/034,745

Applicant(s)

SMALLEY ET AL.

Examiner

John S. Maples

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 166-169, 172-174, 177-180 and 189 ~~is/are~~ are pending in the application.
- 4a) Of the above claim(s) 173 and 174 ~~is/are~~ are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 166-169, 172, 177-180, 189 ~~is/are~~ are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. Applicant's election without traverse of Group I in the reply filed on April 17, 2006 is acknowledged.

2. Claims 173 and 174 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 166, 167, 172, 189 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiang-"Carbon Nanotubes". (Kiang) (New Rejection)

Reference is made to page 903, the left column, page 905 of Kiang, the second column, lines 2-12 and to Figures 2a, 2b and 2c. These portions of Kiang disclose a

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substantially two-dimensional membrane of substantially parallel single-wall carbon nanotubes. With spacing between the nanotubes, the membrane is nanoporous. Not all of the nanotubes in the figures are substantially parallel, however, many of the nanotubes in this figure are substantially parallel. The only claimed feature not taught by Kiang are the 10^3 and the 10^6 nanotubes. It would have been obvious to one of ordinary skill in this art at the time the invention was made to have utilized 10^3 or 10^6 nanotubes in Kiang so that the membrane in Kiang could be used as a large conductor in an electrical environment.

Applicant's arguments have all been considered but are not deemed persuasive. Applicant argues that Kiang does not teach 10^3 or 10^6 nanotubes. This may be true, however, the new 103 rejection has been applied above and renders the claims rejected as set forth in the previous paragraph.

Applicant argues that the nanotubes are not a two-dimensional array. The examiner respectfully disagrees. First of all, it is noted that applicant has used the word "substantially". This means that the array is not completely two-dimensional. Also, as seen in Figures 2a, 2b and 2c, the nanotubes are substantially in a two-dimensional array.

Applicant also argues that Kiang does not teach a membrane. This is not convincing because the same forces that are used to hold together and form applicant's membrane are the same forces that hold together the membrane in Kiang. They are van der Waals attraction as set forth in the top of the right hand column on page 905 of Kiang.

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6. Claims 168, 169, 177-180 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiang in view of both Murphy et al.-US 6,448,412 (Murphy) and Ikeda et al.-US 5,879,836. (Ikeda)

The patent to Kiang sets forth all of the claimed subject matter except for the photoactive molecule attached to the membrane and for a lithium ion battery having a membrane. Murphy teaches in column 27, lines 36-51, a fluorescent dye labeled to a fullerene. To thus include in the single walled nanotubes of Kiang the fluorescent dye as shown by Murphy would have been obvious to one of ordinary skill in this art so that the nanotubes could be traced. Ikeda et al. discloses a lithium ion battery having nanotubes-see column 3, lines 42-44 among other places in this patent. To have utilized the nanotubes of Kiang in the lithium ion battery shown by Ikeda would have been obvious so that a greater output could have been realized because of the superior performance of the lithium ion battery.

In response to applicant's question, the above rejection is the primary reference Kiang taken in view of Murphy and in view of Ikeda.

Applicant argues that Murphy does not teach the claimed elements that the examiner states are in Kiang. This may be true, however, Murphy was not applied to teach these elements, but only to teach the fluorescent dye on a carbon material.

Applicant further argues that there is no motivation to combine Murphy with Kiang. Both Kiang and Murphy concern carbon materials that are used for a variety of different purposes. To have incorporated in one carbon material-Kiang, that which is

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utilized in another carbon material-Murphy, is a straightforward obvious substitution of no patentable moment.

Applicant argues that Ikeda does not teach the claimed elements that the examiner states are in Kiang. This may be true, however, Ikeda was not applied to teach these elements, but only to teach a lithium ion battery having nanotubes.

It is also noted that applicant argues much of the claim language that appeared in section 5 of this action, so no additional rebuttal is necessary.

Applicant argues that there is no motivation to combine Ikeda with Kiang. Both Ikeda and Kiang teach nanotubes and to combine the teachings of one reference with another reference in the same field is a straightforward obvious substitution.

7. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

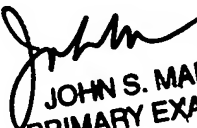
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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John S. Maples whose telephone number is 571-272-1287. The examiner can normally be reached on Monday-Thursday, 6:15-3:45, and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JSM/6-25-2006


JOHN S. MAPLES
PRIMARY EXAMINER